



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,065	08/24/2007	Massimo Morbidelli	088857-000000US	3261

20350 7590 10/16/2008  
TOWNSEND AND TOWNSEND AND CREW, LLP  
TWO EMBARCADERO CENTER  
EIGHTH FLOOR  
SAN FRANCISCO, CA 94111-3834

EXAMINER
----------

CUTLIFF, YATE KAI RENE

ART UNIT	PAPER NUMBER
----------	--------------

1621

MAIL DATE	DELIVERY MODE
-----------	---------------

10/16/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,065	<b>Applicant(s)</b> MORBIDELLI ET AL.	
	<b>Examiner</b> YATE' K. CUTLIFF	<b>Art Unit</b> 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 14 July 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-9,14 and 15 is/are rejected.
- 7) ☒ Claim(s) 2,10-13 and 16-18 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/14/2006</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 1621

4. Claims 1, 3-9, 14 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Prior Separation Technology GMBH (WO 99/29388 or AT 405026B) (Prior), in view of Snyder et al. (US 5,470,479).

5. The rejected claims cover, inter alia, 1. (Original) A method for preparing at least one chemical reaction product by means of chemical reaction of one or more reactants, optionally dissolved in one or more solvents, which are supplied as a feed flow, through the contact with a heterogeneous catalyst in a continuously operated fixed-bed reactor packed with a particle bed, a continuous annular chromatograph (CAC), packed with said particle bed, being used as said fixed-bed reactor in which said at least one reaction product is formed and purified and said at least one purified reaction product as well as any by-products and/or unreacted reactants present are withdrawn from said annular chromatograph each at a different and predetermined rotational angle position, characterized in that only one type of particulate material in a single particle bed is used as both catalyst for the formation of said at least one reaction product in said particle bed and as chromatographic medium for the purification thereof.

Dependent claims 3-9, 14 and 15 further set out the limitations and parameters of the process.

6. Prior discloses the method for conducting a chemical reaction and separation in a singular annular chromatograph that has at least one reaction zone for conducting the chemical reactions and at least one associated separation zone for chromatographic separation, to produce a reaction product in a continuous operation. (see abstract and page 2 paragraph 6). The reaction zone and the separation zone of Prior contain each

Art Unit: 1621

have a fixed bed reactor. (see page 3 paragraph 1). The material for the reaction zone and separation zone can be the same material i.e. anion exchange resins or cation exchange resins. The material in the reaction zone has reaction catalyst such as metallic one, metal complexes and the catalyst is immobilized in the reaction zone. (see page 3 paragraph 4). The annular chromatograph includes the use of a temperature coat (temperature jacket) for heating or cooling the column during the reaction and separation. (see page 6 paragraph 3).

Prior fails to disclose the use of zeolite as the particulate material in the fixed bed of the reaction zone and the separation zone.

However, states that Prior states that metal complexes can be used in the reaction catalyst immobilized in the reaction zone. Further, Snyder et al. uses a continuous annular chromatograph to separate gadolinium isotopes and discloses that the stationary phase can be an anion or cation exchange resin, which may include solid matrix of these cation and anion exchange resins with zeolite structures. Lastly, zeolites are basically hydrated aluminosilicate minerals.

It would have been obvious to one of ordinary skill in the art to prepare a chemical reaction product in a continuous annular chromatography that has a fixed bed reactor with packed with a metal complex as suggested by Prior and use a zeolite as the particulate material suggested by Snyder, since zeolite is known ion exchange resin, to achieve the claimed invention. The skilled artisan would have been motivated to utilize the zeolite as the particulate material, as taught by Snyder, in both the reaction

Art Unit: 1621

zone and separation zone because it is a known ion exchange resin that has catalyst activity.

Therefore, the invention as a whole was *prima facie* obvious because a person of ordinary skill in the art at the time the invention was made, would have been motivated to combine the prior art to achieve the claimed invention and that there would have been a reasonable expectation of success.

### ***Allowable Subject Matter***

7. Claims 2, 10—13, 16-18 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: None of the prior art references teach or suggest the use of the continuous annular as suggested by claims 2, and 10-13. Further, none of the prior art references teach or suggest the production of the reactant products set out in claims 16-18 in a continuous annular chromatograph.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YATE' K. CUTLIFF whose telephone number is (571)272-9067. The examiner can normally be reached on M-TH 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel M. Sullivan can be reached on (571) 272 - 0779. The fax phone

Art Unit: 1621

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Yaté K. Cutliff  
Patent Examiner  
Group Art Unit 1621  
Technology Center 1600

/Porfirio Nazario-Gonzalez/  
Primary Examiner  
Art Unit 1621